BIRZEIT UNIVERSITY

Mathematics Department
Math1321 -Calculus II
Course Outline
Second Semester 2023/2024

Course Description

This is the second course of the calculus series. This course includes the following topics: Integration by partial fractions, Integration of trigonometric functions, Integration using trigonometric substitution, Improper integrals, Infinite sequences and series, The Integral test, Comparison tests, The Ratio and Root tests, Alternating series, Power series, Taylor and Maclaurin series, Convergence of Taylor series, The Binomial series, Applications of Taylor series, Parametrization of Plane Curves, Calculus with Parametric Curves, Polar Coordinates, Graphing in Polar Coordinates, Complex numbers.

Textbook

Thomas G., M.Weir and J.Hass, Thomas' Calculus. Twelfth Edition, Addison-Wesley.

Grading Policy

- Two Hour Exams (if possible)[1] 50%
- Final Exam 40%
- Quizzes 10 %

General Guidelines

- **Attendance:** Extremely necessary.
- **Cheating:** Immediate course fail with final expulsion possibility.
- **Make Up:**
  - There is a make up exam for the final exam **only**; conditioned with an acceptable excuse sent via Ritaj portal during 48 hours after the final exam being held. Otherwise, the absentee gets **Fail Absent -FA-** (Grade = 50).

[1] If not possible to make two exams, then we do Midterm with 35%, Final 50%, Quizzes 15%

  - In case of missing **one** of the two hour exams with acceptable excuses, the formula in the student guide for grades will be used. Otherwise, the absentee gets **zero**.

- **Internet:** Check your personal Ritaj account daily.
- **Exams Instructions:**
  - Calculators are never allowed.
  - Mobiles must be set off during lectures and exams.
  - Personal BZU ID is mandatory.

Course Outcomes

After students approve this course, they will be able to

1. integrate trigonometric functions,
2. do integration using trigonometric substitution,
3. do integration by partial fractions,
4. find improper integrals,
5. comprehend the difference between sequences and series,
6. understand the concept of convergence and divergence of sequences and series,
7. use different mathematical tests for convergence,
8. calculate Taylor and Maclaurin series and use them in estimation,
9. do calculus of parametric curves,
10. understand polar coordinates,
11. graph in Polar Coordinates,
12. use complex numbers.

Assigned Problems

Section	Topic	Discussion Problems
	Chapter 8	
8.2	Trigonometric integrals	5,11,18,20,22,28,33,36,38,42,45,47,51,64,67
8.3	Trigonometric substitutions	8,10,12,14,18,24,26,29,33,38,45,46
8.4	Integration using partial fractions	12,14,18,20,23,29,30,34,37,42,47,49,54
8.7	Improper integrals	1,5,11,14,17,21,24,26,32,34,37,39 42,46,48,50,54,56,58,62,64,66
	Chapter 10	
10.1	Sequences	4,10,16,22,26,30,36,42,47,48,50,54, 59,62,63,69,72,77,82,89,95
10.2	Infinite Series	6,12,13,16,18,20,32,34,36,39,44,48, 54,60, 62,65,67,70,78
10.3	The Integral Test	6,8,12,14,20,22,26,31,34,36,40
10.4	Comparison Tests	2,8,10,14,15,18,22,25,27, 28,32,36,40,42,46,47,51,53
10.5	The Ratio and Root Tests	6,7,12,15,16,20,22,28,30,32,38,43,48,58,60
10.6	Alternating Series, Absolute & Conditional Convergence	6,8,11,14,18,20,24,28,30,38,42,45,50,54
10.7	Power Series	4,7,12,14,18,22,23,24, 30,32,36,40,42,46,48,49
10.8	Taylor and Maclaurin Series	3,8,13,20,22,27,30,32,37
10.9	Convergence of Taylor Series	7,10,12,16,18,19,22,28,29,35,37,40,41
10.10	The Binomial Series and Applications of Taylor Series	2,8,10,14,15,25,26,30,34,35
	Chapter 11	
11.1	Parametrization of Plane Curves	2,6,10,13,14,16,18,22,23,26
11.2	Calculus with Parametric Curves	6,8,11,14,15,20,22,25,27,30,34
11.3	Polar Coordinates	2,3,4,6,7,11, 14,16,22,24,26,29, 31,32,38,42,44,50,51, 59,63
11.4	Graphing in Polar Coordinates	1,4, 6,7,10,14,18, 19,21,22,26,30
A7	Complex numbers	2,5,7,9,10,12,18,19,20,24